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From managing transitions towards building movements of affect: Advancing agroecological practices and transformation in Brazil

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ABSTRACT

Policy and scholarly efforts to foster sustainable transformations focus on the contribution of practices and institutions; thus far, however, the affects that encourage and enable people to mobilise for and *establish* these transformative practices and institutions have received less attention. Drawing on the example of the agroecology movement in Brazil, this article examines how affects foster the creation of new farming, community and market relations. It argues that affects play a decisive role in mobilising people and encouraging them to identify and challenge unsustainable relations and practices, develop alternatives, and translate local concerns into policy proposals. It also shows that affects support the establishment of transformative practices by enabling caring relations with nature, and by fostering knowledge and institutional arrangements that support human and non-human others. We conclude that mainstream approaches to sustainability transformations should focus more on building movements of affect, as these not only address sustainability issues but also build and draw on the potential of people to bring about transformation.

1. Introduction

In the decades following WWII food production and biodiversity conservation have been treated as separate realms. This modernist 'land sparing' approach (Phalan 2011), which in effect spares large tracts of land for nature's exclusive use through the creation of more national parks (Adams and Hutton 2007) by industrializing agriculture on existing farmland (Van der Ploeg 2006), has not managed to address problems such as pollution, natural resource degradation, biodiversity loss, social inequality, and the 'pushing' of farm labour to cities. A growing number of initiatives including social movements such as the agroecology movement (Van den Berg et. al. 2018b, Rosset and Altieri 2017, Altieri and Toledo 2011), the environmental justice movement (Apostolopoulou and Cortes-Vazquez 2018, Temper 2018), peasant movements (Van den Berg et. al. 2018a, Van der Ploeg 2008), and transnational agrarian movements (Borras 2008) seek to undo this separation. These initiatives offer 'land sharing' (Kremen and Merelender 2018) or 'territorial' (Escobar 2016, 2010) alternatives which situate food production in places that also work for the benefit of nature, culture and the sovereignty of its inhabitant. Some of these initiatives are now gaining interest from researchers and policy makers who see in them potential solutions for wider transformations towards sustainability (Elzen et al. 2017, FAO 2018, Feola 2021). Despite this growing interest, however, it is less known what drives participants in these social movements to seek, and engage in these processes of (agroecological) transformation.

Many studies on sustainability transformations approach transformation from the perspective of social-ecological or socio-technical systems (Scoones et al. 2020, Smith and Stirling 2008). Both have contributed to a complex understanding of the practices and institutions that underpin sustainability transformation (Feola 2015, Foxon et al. 2008)[1]. Socio-ecological approaches have given insight on how natural resource management practices and governance institutions can be changed so that can they sustain nature for future generations (Folke

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[1] These commonalities have led to efforts to combine the two approaches. See for example: Ahlborg et al. (2019) and Fischer-Kowalski and Rotmans (2009).

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et al. 2010, Holling 1973). Increasingly, these approaches use the concept of ecosystem services, defined as the benefits that people derive from nature, to assess the desirability of management practices and steer interventions (Binder et al. 2013). While the concept has been criticised for its focus on economic transactions (Turnhout et. al 2013), scholars have since then sought to incorporate notions of cultural services and nature's benefits or contributions to people (Diaz et al. 2018). Socio-technical system approaches, on the other hand, have contributed to an understanding of transformation from the perspective of technology and innovation (Lachman 2013, Rotmans and Loorbach 2007, Geels 2002). From this angle, the notion of transition management is used to denote how transitions can be set in motion by developing innovations and building coalitions with government, private sector and civil society to implement policy and other incentives that foster the use of these innovations and reconfigure the dominant socio-technical regime (e.g. Avelino & Wittmayer 2016, Loorbach 2007, Kemp and Rotmans 2005). While socio-technical approaches have been criticised for being overtly technical and managerial (e.g. Pelenc et. al 2019, Kenis and Lievens 2014), efforts have been made to incorporate more complex understandings of human behaviour (e.g. Lamine 2015, Wiskerke and Van der Ploeg 2013, Shove et al. 2012).

All in all, the combined literature on social-ecological and socio-technical systems has contributed to a comprehensive understanding of the practices and supporting institutions that inhibit and advance transformation. However, they have paid less attention to the affects that encourage and enable people to engage in transformation, including social change for agroecology. While the literature builds on economic, and increasingly also cultural, models of human behaviour (Scoones et al. 2020), the role of bodily sensations such as wishes, grievances and passions has received little consideration. The notion of affect gives central attention to these bodily sensations (Davidson and Milligan 2004, Deleuze and Guattari 1988). It sheds light on how, by employing affective labour, agents can deliberately cultivate or manipulate bodily sensations to encourage people to change (Singh 2013, Hardt and Negri 2004). It also allows for a view of how bodily sensations between people and non-human nature enable practices to become established or embodied (Davies, 2012, Braun 2008).

The question we address in this article is how affects contribute to the establishment of practices and institutions that promote shifts in mindsets from modernist sparing solutions to sharing approaches such as agroecology. In so doing, we build onliterature on agroecology and social movements that has pointed towards the importance of affect as a force that mobilises people (e.g. De La Cadena 2015, Costabeber and Moyano 2000), shapes movement activities (McFarlane 2009, Davies 2012), and fosters the construction of sustainable practices (e.g. Escobar 2016, Hayes-Conroy 2010, Sherwood et al. 2017). However, few empirical studies have been carried out on the role of affect in encouraging and enabling sustainability transformations in agriculture and food production. In this article we explore the role of affect in food and agriculture transformation by looking at the agroecology movement in Brazil. More specifically, we look at how affective labour encourages people to mobilise for transformation and how bodily sensations between people and non-human nature enable transformative practices to become embodied.

We draw on the process of agroecological transformation playing out in the Zona da Mata in the state of Minas Gerais, Brazil. Here, the agroecology movement successfully mobilised farmers, researchers and activists to construct new farming, community and market relations and create an enabling institutional environment (Van den Berg 2018a, 2018b, Cardoso 2001). Our analysis demonstrates that affective labour plays a key role in encouraging people to identify and challenge unsustainable relations and practices, develop alternatives, and translate local concerns into policy proposals. Subsequently, we show that for transformative practices to become embodied, knowledge and an enabling institutional environment that aligns with the bodily sensations of human and non-human others is needed. We conclude our article by suggesting that socialecological and socio-technical approaches to sustainability transformations should pay more attention to nourishing affects as these not only address sustainability issues, but also build and draw on the potential proper to people and their relation with nature to realise transformation.

2. Affect, mobilisation and transformation

2.1. Mobilisation and affective labour

The notion of affective labour allows for an understanding of how people are encouraged to engage in processes of transformation. Affect refers to bodily sensations, including feelings, wishes, passions and grievances, that draw human and non-human agents in and out of the relations that are constantly being created and that constantly create these agents (Massumi 2015, Deleuze and Guattari 1988). As such, affects are sensations that come from within the body and that mediate the formation of new relations, as well as sensations between bodies that constitute these new relations (Hayes-Conroy and Hayes-Conroy 2010). Affective labour is the work of cultivating or manipulating bodily sensations or embodied experiences to mobilise people (Singh 2013, Hardt and Negri 2004).

The literature on social movements provides rich illustrations of how participants are mobilised for change through the cultivation of grievances over oppressive regimes and/or of wishes to defend or advance territories that harbour more caring relations between people and non-human nature (Porto-Gonçalves 2006, Fernandes 2000, 2005). The case of the Brazilian Landless Workers Movement for instance, shows how workers' grievances over capitalist and feudal relations and their desires for a different way of life brings them together in efforts to occupy land and establish new farms (Wolford 2010, Vergara-Camus 2009). Likewise, de La Cadena (2015) shows how the Ranakuna Indigenous peoples' wish to maintain the mutual relationships of care that their territory harbours between people, mountains, rivers, lagoons, animals and plants, led them to mobilise in various struggles against the state.

For grievances, wishes and other affects to become transformative forces, they must problematise oppressive power relations. Oppressive power relations and regimes become embodied in everyday life where they are made to seem logical and natural (Foucault 1991). However, as bodily affects cannot be fully contained by regimes of power, affects overflowing these regimes offer an opportunity to challenge them (Hayes-Conroy and Hayes-Conroy 2010, Hardt and Negri 2004). For these overflowing affects to become transformative, they must be mobilised to critically reflect on those relations of power that cause oppression (Guattari and Rolnik 1999). Leguizamon (2020) illustrates how without such reflection, mobilisation will not occur. She shows how the state and agri-business have made the presence of large scale, chemical intensive soy production in Argentina seem natural and how, despite the existence of grievances about the negative environmental and health impacts of the soy-agro-industrial complex, the lack of politicization of these grievances have resulted in making the problem invisible and mobilisation non-existent. To facilitate this reflection that is needed to challenge oppression and power, the literature on social movements includes various methodological tools, including political trainings (Rosset et. al 2019), alternative pedagogies (Meek et al., 2019), peasant-to-peasant gatherings (Val et al. 2019) and peace building methodologies (Hayes-Conroy 2018). Barbosa (2015) for instance describes how the alternative pedagogy Educaçao do Campo and the milpa pedagogy play an important role in mobilising the Landless Workers Movement in Brazil and the Zapatista movement in Mexico. As shown by Hayes-Conroy and Montoya (2017), who looked at peacebuilding efforts around youth in Colombia, critical reflections not only unravel, and make people aware of, oppressive relations, but also motivates them for change.

Next to challenging power, affects can also encourage people to build alternatives for transformation. The creation of alternatives involves

generating ideas and practices that go beyond dominant or mainstream ways of feeling, thinking and doing (Escobar 2016). Sherwood et al. (2017) and Porto-Gonçalves (2006) argue that affects overflow mainstream ways of working and thinking and therefore carry innovative potential to caring ideas and practices. Affective labour can be employed to stimulate these ideas and practices by creating spaces that nourish encounters and give room for pre-conscious, embodied reactions, memory (or lack thereof), spirituality, and everyday lived experiences (Khoo 2015). Such spaces may be diverse. For example, Routledge (2012) shows that activist art performances during manifestations can generate affects for change. In the same vein, Singh (2013) shows how collective working sessions in forests encouraged the formation of affective relations between villagers, plants, animals and trees, and led to the development of caring practices with the forest. Sherwood et al. (2018) show how food fairs in Ecuador affectively draw peasants and citizens to develop more caring relations and practices that are not only about buying and selling but that also revolve around food cultures, sustainability and landscape.

2.2. Practices of transformation and embodiment

Sustainable transformation occurs when there is a shift from practices that oppress towards practices that care for nature and people. Oppressive practices impose a specific order on others (including non-human ones), and thereby exploit them or deny their agency (Escobar 2016, Pickering 2008, Haraway 1993). An example is given by Hardt and Negri (2004) who argue that capitalism disempowers workers as their affects are expropriated to generate surplus value rather than used for self-determination. Through the routinisation of specific affects, capitalist constellations slowly exhaust and erode the bodily capacities of human and non-human nature (Woodward and Lea 2010). Practices of care, align with others in ways that increase the agency of those involved (Nelson and Power 2018, Gatens and Lloyd 1999, Hinchliffe 2007). As argued by Puig de la Bellacasa (2017) notions of care involve not only humans but extend to care for, and being cared by non-human others.

The notion of embodiment allows for an understanding of how practices of transformation become established. Embodiment refers to the process by whcih affective encounters and interactions align into more stable and routinised practices (Davies, 2012, Braun 2008). Practices are not isolated but have to be aligned with nearby agents (e.g. the soil, birds or micro-organisms) as well as more distant supportive agents, constellations or bodies of knowledge (e.g. institutions, policies and markets) to assume existence (Currier 2003, Deleuze and Guattari 1988). For care practices to become embodied, alignments with non-human nature, bodies of knowledge and institutions must therefore be such that they accommodate for the agencies of human and non-human others.

Some scholars have argued that to establish practices that accommodate for the agency of human and non-human others, these practices must be approached in a sensitive and responsive manner (Pickering 2008, Hinchliffe 2007). Boonman-Berson et. al. (2016, 2019) for instance, show how paying more attention and responding to the behaviour of wild boars and black bears enabled natural resource managers to devise practices that create spaces for co-existence of humans and animals, rather than having to contain them in specific areas. In the field of agriculture, Ingold (2000) describes how continuous observation and interaction with nature, led peasants to establish numerous practices that attune their lives to non-human nature, including animals, seasonal patterns and natural landscapes. Caring practices can emerge spontaneously but their construction can also be actively fostered. With regard to the latter, the literature on agroecology describes various methodologies that focus on observing, exploring and experimenting with non-human nature, including agroecological exchanges (Zanelli et al. 2015), field laboratories (Stuiver et al. 2003) and farmer field schools (Waddington et al. 2014).

For care practices to become established, these have to embody knowledges that are inclusive. Dominant regimes of knowledge can oppress human and non-human others (Foucault 1991). Escobar (2016) and Sousa Santos (2007), argue that Eurocentric knowledge has claimed universality and superiority, thereby oppressing and silencing the knowledges of Indigenous peoples, peasants and people in the Global South. Sousa Santos (2007) argues for a process of “decolonialisation” that challenges Eurocentric knowledge and recognises the existence of diverse, relationally situated knowledges that co-constitute different realities. Escobar (2010) describes how situated knowledge can be created in alignments of people and natures that are embedded in particular territories. Coolsaet (2016) describes how such alignments can be created in agricultural research and development, showing how local collaborations of farmers, researchers and other agents in France employed farmers’ own experiences to create knowledge and practices to improve their own seed systems. In a similar vein, Botelho et al. (2016) show how collaborations in Brazil incorporated farmers’ culture and spiritual values in the construction of agro-forestry knowledge and practices.

Finally, for care practices to become embodied they need a supportive institutional environment. The institutional environment is often not supportive and may even be oppressive of care practices (Hirata 2012). In the field of agriculture McMichael (2013) and Van der Ploeg (2018) argue that dominant institutional arrangements, including policies and commodity markets, favour modern, industrial forms of agriculture, often oppress marginalised producers, and hamper the development of sustainable alternatives. Various scholars have shown how a more enabling institutional environment can be created by bypassing dominant institutions or creating self-governed institutions (Van der Ploeg 2008, Pahnke 2015, Van den Berg 2018b). Van der Ploeg (2018) shows how commodity markets can be partially bypassed through the production of own inputs, rather than purchasing them. Pahnke (2015) shows how the Brazilian Landless Workers Movement established self-governed cooperative markets, reducing their dependency on commodity ones and enabling them to operate according to their own values. Other scholars have shown how existing institutions can be altered so that they become more enabling to agroecology (Petersen et al. 2013). For example, Petersen et al. (2013) show how pressure by the agroecology movement in Brazil led to the establishment of national policies that support agroecological practices and local markets, and Lamine et al. (2020) show how strategies of bypassing can alter existing institutions or combine these with new ones to foster transformation.

3. Case description and methods

Our article focuses on transformational processes set in motion by the agroecology movement in the Zona da Mata region in the state of Minas Gerais, Brazil. In Latin America and Brazil, agroecology emerged in the 1980s in resistance and alternative to the Green Revolution (Altieri and Toledo 2011). The Green Revolution, which was promoted from the early 1960s onwards, sought to modernize and commercialize agriculture through monocropping, the use of chemical fertilizers, agrotoxins, production specialization, and insertion into national and global markets (Gomes, 1986). Although the Green Revolution led to short-term yield increases in some places, it also led to biodiversity loss, soil erosion, deforestation, the pollution and depletion of water sources and indebtedness amongst farmers (Cardoso et al., 2001; Fernandes et al., 2005; Cardoso and Mendes, 2015).

Agroecology challenged the premises of the Green Revolution and sought to develop alternative practices based on local rather than external resources, working with existing soil and biodiversity. Importantly, agroecology included farmers’ own knowledge (Altieri and Toledo 2011). The alternative practices that agroecooogy entails initially included cover cropping, agro-forestry, and integrated pest management. Later, agroecology also established alternative market

relations that more directly linked producers to consumers e.g. by way of local farmers' markets, participatory guarantee systems and community supported agriculture (van den Berg 2018a). In Brazil, what is known as 'alternative agriculture' preceded the introduction of agroecology. Alternative agriculture was developed by the Project of Alternative Technologies network (Rede PTA) established in 1983 and was later renamed as National Articulation on Agroecology (ANA) in 2002. Through ANA, various national public policies to support agroecology were established, including the Food Acquisition Policy which facilitates the construction of local markets (Schmitt 2016). ANA is constituted by regional collaborations of peasants, researchers, local NGOs and peasant organizations active in various parts of Brazil, including the Zona da Mata in Minas Gerais (ANA 2014).

This research takes the Zona da Mata as a case to study how the agroecology movement encourages and enables people to establish transformative practices and supportive institutions. The Zona da Mata hosts one of the oldest regional agroecology movements in Brazil (Schmitt 2016). The movement has been active for over 30 years and as a result, the ways through which it mobilizes people and facilitates the construction of alternative practices are well established. The agroecology movement consists of peasants, peasant groups and organizations, the Centre for Alternative Technologies (CTA), and researchers from the Federal University of Viçosa (UFV) (Cardoso et al. 2001, Cardoso and Mendes, 2015). Our analysis. focuses on three municipalities in the Zona da Mata (Araponga, Divino and Espera Feliz) where the movement has been highly active.

We adopted a qualitative approach to data collection that allowed us to capture various encounters between human and non-human agents (Schwartz-Shea and Yanow 2012). Following Hayes-Conroy (2010) our approach involved the participatory co-creation of data to capture agents' bodily feelings and sensations, particularly how agroecology affects bodies to come together and to engage in the construction of transformative practices. Data was collected by the first author who carried out extensive fieldwork in 2016–2018. During these periods, he allied himself to researchers from the UFV participating in the agroecology movement. This gave him access to various leaders in the movement as well as to their constituencies and activities. He participated in public gatherings, closed and open meetings, and other activities organised by the movement, conducted in-depth interviews with movement leaders and constituencies, and organised focus group discussions.

The data used for this research consists of transcribed interviews, notes from participant observation and transcribed recordings from three focus group meetings. Participant observation consisted of participating and helping with the organisation of 15 gatherings to promote agroecology, including public events, meetings to prepare for these events and meetings by various working groups. This allowed the first author to observe how movement participants motivate and convince others to partake in agroecological practices. The focus group meetings were held in each of the three municipalities and consisted of 15–40 participants. During the focus group meetings, a Venn diagram was used to facilitate discussion about the actors and organisations that were believed to support or hinder agroecology. Finally, in-depth interviews were carried out with 20 individuals in the three municipalities. These individuals were selected on the basis of their different levels of participation in gatherings and in the development of agroecological practices. Interviews were carried out on participants' farms, offices or during particular encounters. A balance was sought in age and gender. Interviewees were peasants, members from peasant organisations, researchers from the UFV and staff from CTA.

To analyse the collected data, grounded theory (Birks and Mills 2011) was used. Empirical experiences and collected data were used to form broad categories to help understand what the movement was doing. From this categorisation we found that many movement activities revolved around promoting and constructing agroecological practices and in mobilising people (via affect). We then conducted a round of coding focused on these practices. Based on the coding outcomes, and to facilitate the analysis, we defined three broad, interrelated categories of practices: 1) farming practices including agroforestry and mulching in which movement agents used non-human nature to mobilise people; 2) community practices through which peasants pool their productive resources (e.g.; labour exchange and rotating credit schemes) and in which movement agents stressed the cooperative relation between peasants to motivate them for community practices; and 3)market relations (including farmers' markets) where a closer relation between peasants and consumers was stressed to mobilise people. Once these types of practices were identified we conducted another round of coding, concentrating on how affective labour mobilises agents to create the three different practices and how these practices become embodied or disembodied. To explore the significance of the findings for socio-ecological and socio-technical transformation, we contrasted the results of the analysis with the literature on ecosystem services and transition management theory.

4. the emergence of agroecological practices in the Zona da Mata

4.1. Farming practices

The agroecology movement in the Zona da Mata employed affective labour to foster the formation of several farming practices. Affective labour especially consisted of organising encounters between peasants, peasant groups and organisations, the Centre of Alternative Technologies (CTA) and the (UFV). In the municipality of Araponga, one of the first of these encounters was held in 1989. During this encounter, peasants expressed grievances over their lands, which were degrading as a result of Green Revolution practices. Peasants' grievances met with the wishes of university researchers and CTA staff to put the newly emerging field of agroecology into practice. At the gathering, peasants and researchers reflected on farming practices that were used and on the causes of soil degradation (Cardoso et al., 2001). This led to the establishment of the "strong earth" committee; a group of peasants, union representatives, and staff from NGOs who sought to find ways on how to improve soil quality and strengthen the 'weak' earth.

The peasant organisations, CTA, and UFV held similar gatherings in other municipalities including Divino and Espera Feliz, where grievances over soil degradation and wishes to take better care of the soil were mobilised to drive processes of continuous learning and reflection and to undertake on-farm experiments and research to devise soil conservation practices, particularly agroforestry (Cardoso et al., 2001; Guijt 2008, Souza et al., 2010, Souza et al. 2012). In 2008, the encounters organised by the agroecology movement were institutionalised in the *intercâmbios*, which were inspired by the *peasant to peasant* gatherings in other Latin American countries (Zanelli et al. 2015). These *intercâmbios,* which continue to exist today, were held on farms in various municipalities in Zona da Mata including Araponga, Divino and Espera Feliz.

The *intercâmbios* cultivated wishes to care more for and work closer to nature by evoking bodily sensations and embodied experiences that people have in relation to non-human agents. This was done by showcasing inspiring practices, storytelling and sharing experiences. An example is an excursion through an agro-forest where participants' bodily haptic, olfactory, auditory, gustatory and visual sensations were evoked by exposing them, with their bare feet, to the soil, the diversity of trees and cultivated plants, flowers, fruits, birds, insects, wild animals and other entities harboured by the agro-forest. Through these encounters with non-humans wishes to care more and work closer to nature were brought to the fore but also cultivated:

> "Through the many visits that we had to different farms during the *intercâmbios* we started to realise that trees were helping […]. I said to myself: 'We should plant these trees because they do not only help

the place, they help the animals, they help the coffee, the soil and they also help us'". (R., peasant in Divino)

Wishes to engage more profoundly with nature were mobilised to construct alternative farming practices. The agroecology movement supported the formation of groups working on issues that emerged from the encounters. In these groups, peasants, researchers, and peasant organisations engaged in a process of discovery, experimentation, and learning to explore alignments between humans and nature that could potentially develop into new practices such as agroforestry. This entailed finding alignments that were deemed productive, often through learning-by-doing. For instance, some agroforestry trees peasants experimented with, negatively affected the harvest of coffee, or provoked allergic reactions amongst them. Solutions were found in pruning or by replacing them with other trees:

"You have to let the trees grow and prune all the time. To have this nutrient cycle. If you plant a tree and leave it there it will probably do more harm than good to other plants. [..] Also when you let a branch grow a bit and then cut it, it will stand in the way when harvesting coffee." (A., peasant from Divino)

In the end, practices were developed that protect and improve the soil; these included green manuring, alternative weeding, cover cropping, and agroforestry. In these practices, trees, shrubs, and other vegetation are planted or left to grow spontaneously so that they cover the soil and provide it with organic matter. This is done in between cultivated crops such as coffee but also near streams, in fields with degraded soils and in areas of the farm peasants consider to be "weak" such as steep slopes. Practices were productive in that they effectively protected and regenerated the soil, streams and areas for birds and other wildlife. Trees or vegetation were also found to fix nitrogen, attract pollinators or natural enemies to control pests as well as supply wood, fruits and other consumables to the family and domestic and wild animals (Rezende et al. 2014, Souza et al. 2010).

For agroecology to become embodied in practices, the agroecology movement had to challenge the values and knowledges that are promoted by agri-business and reproduced by local agricultural shops, coffee plantation owners, cattle ranchers, researchers, technicians and some parties from the municipal prefecture. These agents promote conventional agricultural knowledge, for instance the assertion that any type of vegetation will compete with the main crop for nutrients, water and light, and must therefore be removed. Moreover, agro-toxin salesmen, who are often trained agronomists, move from door to door to visit peasants in their communities, arguing that if peasants use their products, such as pesticides and chemical fertilisers, they will have less work and make more profit. These ideas formed a threat to agroecology:

"One of the big difficulties for us to keep producing in an agroecological way is to maintain this emotional equilibrium.[…] Oftentimes you hear these types of words: 'ah, in a few days you will go hungry, because you will not have any returns, it won't give you any profit. Or: 'You will never drive a car because you plant in this and that way.' […] You have to maintain a certain equilibrium to not lose hope with people." (A., peasant from Araponga)

To deal with these threats, the agroecology movement construed different knowledges and values. This occurred at the *intercâmbios*, where conventional knowledge was challenged and new knowledge was created through experimentation and drawing on indigenous and scientific knowledges (see also Teixeira et al. 2018a, Teixeira et al. 2018b, Van den Berg et al. 2018b, Botelho et al. 2016). These processes also changed values; vegetation for instance came to be valued for its ability to protect the soil and contribute positively to peasants' ways of farming and life. The movement also organised campaigns on the damages that agro-toxins caused to the environment and workshops on diverse topics such as soil quality:

"Before, we used to plough leaving the soil bare. Today I let the weeds grow, so that the organic material can stay in the soil and each time we gain more freedom from chemical fertilisers." (A., peasant from Divino)

Next to creating knowledge, institutional agents such as peasant cooperatives were important for agroecology to become embodied. Agroecology for example introduced the idea of *roçar,* which in contrast to weeding that was promoted by agribusiness only chops the above-ground part of weeds, thereby leaving the soil structure intact. To advance the practices of *roçar,* peasant organisations promoted the use of *roçadeiras* (brush cutters), which could replace the labour intensive weeding with the *foiçe* (scythe). Peasant cooperatives played an important role in making *roçadeiras* accessible and organising trainings on how to use them.

4.2. Community practices

Next to farming practices, the agroecology movement in the Zona da Mata also employed affective labour to foster the formation of community practices - practices in which community members work together on the basis of principles of cooperation, trust, reciprocity and solidarity. Several practices were formed at gatherings organised by the Ecclesiastical Base Communities (CEBs), which later formed one of the bases of the agroecology movement. The CEBs consists of small self-led and self-organised groups of neighbouring families spread throughout various municipalities. The CEBs were initiated by the Catholic Church in the 1980s, which at the time was informed by Liberation Theology. At the time, many participating peasants did not own land, but they sharecropped land that was owned by large landlords in exchange for part of the harvest.

The CEBs' affective labour consisted of organising encounters at participants' homes where they pray, sing, and reflect on everyday life. At these encounters, peasants expressed grievances about their situation as sharecroppers and about the conditions under which they had to do their work which included abuse by landlords. They expressed dissatisfaction with how they sometimes received less than the agreed harvest share, had to comply with demands for extra services, or were made to work long hours and during bad weather. Peasants also expressed wishes for a freer way of life and farming, in which they could decide for themselves when, what, how, and for whom they would produce. Grievances and wishes were mobilised in relation to ideas of social justice, freedom, solidarity, and sustainability. During these encounters, stories were also shared, including one about a man who, after having been severely abused by his landlord, pooled his resources with his two brothers to buy land and establish himself as an independent peasant. In Araponga, grievances, wishes, ideas, and stories were further mobilised to form the Collective Land Conquest Movement – an initiative through which peasants organized themselves to pool resources and jointly purchase land (van den Berg 2018a, Campos 2014). In 2003, the Collective Land Conquest Movement inspired the *Crédito Fundiário* Policy, which enabled many groups of peasants outside of Araponga to purchase land.

Next to the CEBs, affective labour was also taken up at the *intercâmbios*. The *intercâmbios* cultivated wishes to care more for and work closer to other people in the community by evoking bodily sensations and embodied experiences. This was done through storytelling, the *mística* and by sharing happenings and events. An example of this is the sharing of personal histories, where community members sit in a circle and talk about how their lives, farm and/or surroundings have changed in the course of time. Thus stories were shared about how formerly clean and abundant springs and streams dried up or became polluted, how community members used to work together but don't do so anymore and how animals that were once plentiful have now disappeared:

> "All our lives we have lived here […] we have seen the birds disappear with time. Now many birds are coming back. But overall many have disappeared […] and it's because of poison." (D., peasant during *intercâmbio* in Divino)

By sharing personal and collective histories, embodied memories and experiences of affective relations community members once had with one another and with non-human nature are brought to mind. Through affective labour, wishes to re-establish these relations are mobilised for the construction of community practices.

Community practices that were constructed include the collective purchase of farm capital, such as a tractor, or the collective construction of a mill that can process sugarcane into sugar. In contrast to land, which once purchased is divided, farm capital remains co-owned after purchase. Rotating credit schemes, where peasants pool money and take turns to use the collected money to make specific farm investments, were also set up[2]. Another community practice is *troca de dias* or labour exchange, where peasants form groups that work on each farm in turn to perform specific tasks such as harvesting, weeding or pruning. Yet another practice is *mutirão*[3], where peasants join hands to work on something that is perceived to be for the common good. *Mutirão* is an older practice but has recently been revived to deal with practices that mitigate water scarcity. Facilitated by peasant organisations, church groups, the CTA and the UFV, low-tech septic tanks and water harvesting structures are built, often on farms or in communal institutions such as schools.

Similar to our previous discussion of farming practices, the embedding of agroecology in community practices involved the challenging of existing knowledge and values. At the peasant gatherings, knowledge brought in by agri-business, such as the idea that hiring paid labour is more efficient than harvesting yourself, as well as value that celebrate individualism and competition, were challenged, whereas knowledge of community practices and values of solidarity, cooperation and care were cultivated. The embodiment of agroecology in community practices was also enabled or supported by institutional agents. Some of these agents, such as the peasant unions and cooperatives in the three municipalities, emerged from peasant encounters. These allied to national peasant federations CONFETRAF (Confederação dos Trabalhadores e Trabalhadoras da Agricultrua Familiar) and CONTAG (Confederação dos Trabalhadores na Agricultura), which pushed for the *Credit for Family Farming policy (PRONAF)*.

4.3. Market relations

Another practice advanced by the agroecology movement are local, regional and institutional markets. At the *intercâmbios* and also at other gatherings, including those organised by women groups in Espera Felizwishes to engage with local foods and establish relations with consumers were nourished. During these gatherings bodily sensations and embodied memories were evoked, as participants became exposed to stories told by elders and as farmers showcased traditional and indigenous dishes. For example, part of some of these gatherings is a potluck where participants bring and share not only food but also stories about self-produced drinks, homemade snacks and traditional dishes. The smells, tastes and looks of these foods affect participants and activate wishes to produce these local foods. Embodied memories that participants have of engaging with these foods in their childhood also make them want to re-invent or maintain traditional foods.

> "The most important reason [for me to cultivate all these varieties] is health and the other is to maintain the tradition of our ancestors. Because all of these practices have personality. […] If we don't take care, we lose everything that our parents left us." (D., peasant from Divino)

Wishes to engage in local food production and distribution also emerged from farmers' stress and worries over declines in coffee prices and increases in the prices of chemical fertilisers and of food in the supermarkets. Various gatherings provide room for farmers to express these grievances and share experiences that they have with the market.

> "Today the coffee is giving money, but tomorrow the price of coffee can fall. This has already happened. […] People sometimes entered into debt and became desperate when the coffee price fell: 'I will not be able to pay my debts because the coffee price fell'". (P., peasant from Araponga)

The agroecology movement mobilised peasants' grievances over their finances and wishes for local foods to engage them in discussions and reflections about these, and by questioning their dependency on commodity crops and markets:

> "It doesn't make sense to only produce coffee, only coffee, only coffee. […] Our family didn't always see how important this [food practices] is for our family. We realised this when we started to take part in the unions' work, encounters, *intercâmbios*. And when we became part of the agroecological open market". (Ad., peasant from Divino).
>
> "It is a very sad thing in our region. If you go to sell coffee, it has to be as a commodity. You come but he [the middleman] doesn't even want to know where the coffee came from. The price is only one. Peasants end up not feeling motivated to work for quality. […] The issue of working, taking care of the environment. […] some people don't even want to know about it." (J., peasant from Espera Feliz).

Wishes, grievances and ideas that emerged from these reflections were also mobilised to forge alliances between peasants, citizens, researchers, peasant organisations and NGO's. These alliances extended into wider peasant and agroecology movements such as the Brazilian Agroecology Association (ABA), ANA, and several federations of peasant and rural workeŕs organisations. These organisations are united on the basis of shared grievances against agri-business and a wish for agroecological alternatives and they form an alliance that acts as a source of affective relations that have been mobilized effectively for demonstrations against austerity measures, to construct alternatives and to advance specific policies (Van den Berg et al. 2021). Among these policies are the Food Acquisition Policy (PAA), which provides funds for food transactions between social welfare institutions and peasant organisations, and the National School Feeding Law (PNAE), which obliges public schools to purchase at least 30% of their foods for school meals from local family peasants.

Next to pushing for policies, the agroecology movement also fostered the embodiment of agroecology in particular food and market relations. To do this, desirable and productive alignments between peasants, foods, crops, and consumers were sought and explored. This was done through experimenting with different crops and animals, sharing experiences with different cultivars and breeds, exchanging different varieties of seeds and engaging in conversations with consumers and researchers. Through these activities, knowledge on the cultivation, processing, cooking and marketing of food crops was established:

> "The market revolves not only around buying only a product. It has a dynamic. It works the whole week. People exchange ideas, recipes, health tips. People give feedback on farm and foods. […] People say: 'Why don't you do this. Why don't you do that? I ate this type of food

[2] There is an extensive body of literature describing how rotating credit and savings associations have been used in different rural contexts. For a recent example see Reito (2020).

[3] This is a very widespread and studied system in peasant societies in Latin America, with diverse structures and characteristics in different contexts. Examples include *minqa* used in the Andean region, the *manovuelta* used in the plains and central valleys of Central and South America and the *tequio* used in Mesoamerica.

when I was young'. So it is a very nice exchange. We have made a lot of friendships [at the *intercâmbios*]." (A., peasant from Espera Feliz)

In the end, various practices were established, including the cultivation of vegetables, medicinal plants, fruit trees and animals including chickens, pigs and ducks around the house. Further away from the house, arable crops such as beans, cassava, sugarcane, and maize were cultivated. Fruit trees and native trees were integrated with coffee and pasture. Next to food production practices, market practices, through which these foods could be sold, were also established. These include open peasants' markets and peasants' shops that sell food directly to consumers. Some peasants also engaged in individual market initiatives to sell foods from door to door, sometimes using subscription systems or WhatsApp groups. Regional markets that directly link peasant cooperatives in Araponga, Espera Feliz and Divino to more distant consumer groups in the cities of Viçosa, Belo Horizonte, São Paulo and Rio de Janeiro were also constructed. Next to local and regional markets, the Zona da Mata also hosts institutional markets where peasants provide food for local schools, hospitals and other public institutions.

For agroecology to become embodied in food and market relations, it was necessary to challenge existing knowledge. Knowledge promoted by agribusiness that suggested that wealth can only be achieved through specialisation in a specific commodity, and that it is more efficient to buy food from commodity earnings than to cultivate it yourself, had become deeply engrained in parts of the municipalities. Many peasants for instance felt shame in serving snacks made from their own produce rather than industrial ones such as potato chips or cookies from the supermarket:

"Today, this is really put by society: 'ah you have to plant coffee if you want to have goods or a lot of money, you have to plant coffee. If you don't plant you won't have this.' This is really stuck in people's heads." (V., peasant from Araponga)

The agroecology movement countered this knowledge through collective reflections around the cultivation of own food in relation to values of health, quality and tradition:

"Look, we have quality beans, for […] 30 years we plant these beans. Every year we plant. The quality stays. If we would have this idea of not planting beans because the coffee price is good and it would compensate more to buy than to plant […], we would have lost our beans seed". (G., peasant from Espera Feliz).
"When we have to buy milk we sense the difference. […] I don't know whether it is because cattle from purchased milk produce more or because of what they eat. But when we boil our milk there is cream, fat. Theirs is like water." (P., peasant from Araponga)

Similarly, reflections took place around local markets and values of closer relations between producers and consumers:

"At the open market there is more quality. And the demands are made by the customers themselves. Everyone knows everyone, and they know what you produce and who is producing it." (J., peasant from Espera Feliz)

To foster the embodiment of agroecology in food and market relations, the agroecology movement also aligned peasants with institutional agents. Some of these agents, such as peasant cooperatives and associations, had to be newly established. They play an important role hosting, organising, transporting and mediating supply and demand in many of the shops and open markets. Cooperatives also own processing and packaging plants that enable peasants to produce sugar and cassava and maize flower. Peasant unions and cooperatives in Araponga, Espera Feliz and Divino also played a key role in accessing the PAA and PNAE policies that support institutional markets.

5. Affect, social movements and transformation

5.1. Affective labour and socio-technical systems

The results show how the agroecology movement in the Zona da Mata employs affective labour to mobilise people for transformation by organizing gatherings, working together on the farm, and participating in joint political actions. In the literature on socio-technical systems, the transition management approach provides guidelines to foster sustainability transformations, focusing primarily on the development of innovative practices and institutional environments that supports these practices. We argue that a stronger emphasis on people, and on the affective labour carried out to mobilise them, allows for an understanding of not only innovations but also the people themselves as transformative forces. In the case of the Zona da Mata, the agroecology movement employed affective labour to encourage people to uncover and challenge oppressive power relations and unsustainable regimes, construct alternative practices and knowledges, and build broad-based political movements. To encourage people to uncover and challenge oppressive power relations and unsustainable regimes, the agroecology movement created spaces where people could express grievances and wishes; these, in turn, were mobilised to critically reflect about the relations of oppression and unsustainability that characterised people's everyday lives. In the literature on transition management, people are often included through participatory consultations that are instrumental in assessing or developing innovations (Loorbach 2007, Rotmans & Loorbach 2008). Critical scholars have argued that these participatory consultations engage people only as consumers or end-users of a particular innovation, thereby overlooking relations that exploit or marginalise them (Pelenc et. al 2019, Kenis and Lievens 2014). However, as we have shown, participation can be used to challenge exploitative relations if alternative pedagogies are used and primacy is given to peoples' affects. In line with existing work on alternative pedagogies (e.g. Barbosa), participation in collective reflections in the Zona da Mata helped people uncover and become more aware of the root causes of oppression and unsustainability. Our analysis further demonstrates that peoples' affects provide an entry point to discuss the content of these reflections and that they can be a force that mobilises people to challenge unsustainable relations and practices. In the Zona da Mata grievances over abuses from landlords, income insecurity and soil degradation were topics of reflection but also drew people to these reflections and led peasants to challenge their relation with landlords and agri-business and seek more sustainable and just alternatives.

Affective labour is also employed to generate new ideas and to engage people in the construction of alternative practices. The agroecology movement created spaces where people came together to deliberate and devise alternatives. In the literature on transition management, some authors (e.g. Scoones et al. 2020, Ollivier 2018) have argued that the literature pays little attention to the potential that people themselves have to construct alternatives. To overcome this limitation, several scholars have argued for a more bottom-up approach to transition, with experiments taking place "in the field", rather than in the laboratory, and with farmers and citizens as innovators rather than only end-users or consumers of particular innovations (e.g. Lamine 2020, Schmitt 2016, Mendonça 2015, Wiskerke and Van der Ploeg 2013). The case of the Zona da Mata echoes this understanding of transition, but we have also pointed to the importance of challenging unsustainable practices, as a requirement for the development of alternatives. Our analysis further illustrates how affective labour can be employed to stimulate the construction and implementation of innovative practices. In Brazil affects were cultivated during encounters where agents became exposed to inspiring farming experiences, forgotten plant, tree and animal varieties, traditional dishes, memories, and stories on indigenous ways of life. What emerged from these exchanges were wishes to take better care of the soil rather than exploit it for maximum commodity production, and to work in cooperation rather

than in competition with others. These affective experiences provide ideas for novel practices and encourage people to actually develop them or put them into practice.

Finally, affective labour is employed to translate grievances and wishes into proposals for public policies. In Brazil agroecology formed coalitions with government, research institutes, large NGOs and/or businesses, as well as broader movements that aligned feminist, peasant, environmentalist, Black and Indigenous movements. Much of the work on transition management focuses on the building of coalitions to support particular innovations and tend to ignore these wider social movement dimensions (Rotmans and Loorbach 2008, Geels 2002). However, some authors have argued that as such coalitions tend to collaborate with rather than challenge the dominant regime, thereby conforming to rather than transforming structural patterns of exploitation and inequality caused by the regime (Pelenc et. al 2019, Kenis et al. 2016, Smith and Stirling 2008). The case of agroecology in Brazil shows that this need not be the case; if coalition efforts are complemented with wider movement building activitiesa, local grievances can translate to higher levels of policy and decision making. The agroecology movement in Brazil translated grievances over landlords, income and soil degradation into policy proposals for access to land, local markets and agroforestry, which helped challenge structural inequalities and created alternatives at the territorial level. Affective labour played a key role in translating grievances and wishes into policy proposals where local concerns are reflected.

5.2. Embodiment and socio-ecological systems

Next to mobilising agents through affective labour, the agroecology movement also fostered the embodiment of more care-full farming, community and market relations. In the literature on socio-ecological systems, the ecosystem services approach focuses on establishing practices that benefit people and nature. However, this literature has mostly focused on assessing, designing and promoting practices that can maximise these benefits, paying less attention to the affects that enable them to become embodied. Our results show that affects play a central role in attuning practices with non-human agents, constructing inclusive knowledge and creating an enabling institutional environment. This enables sustainability practices that align with land sharing strategies and that are based on relational understandings of human-environment interactions and co-existence.

For care practices to become embodied, they must first of all become attuned with non-human nature. In the Zona da Mata, caring practices were found through a process of exploration which involved visiting farms, experimenting with trees, exchanging indigenous seeds and sharing experiences about the soil, water, farming and nature. In the end these explorations led to the creation of practices that better attuned people to microbes, weeds, trees, plants, and other non-human agents. Many contributions in the literature on ecosystem services focus on the ecological design or ecological engineering of management practices to maximise benefits nature brings to society (e.g. Sereke et. al. 2015, Kremen and Miles 2012, Zhang et. al 2007, Primmer et al 2012). Others have argued that this focus on design imposes control over, and denies the agency of, people and nature, proposing instead to look at how people and nature entangle in ways that allow for their co-existence (Turnhout et al. 2013). In agreement with various scholars (e.g. Hinchliffe 2007, Pickering 2008), the case of the Zona da Mata shows that to allow for their agency, non-human nature has to be approached in a sensitive and responsive way. Our analysis demonstrates that by creating spaces where people can explore, encounter, experiment with and learn from non-human nature, sensitivity can be nourished and practices of co-existence and care can be actively discovered.

The embodiment of caring practices was also enabled by the creation of knowledge that is inclusive of people and nature. In the Zona da Mata knowledge was constructed through experimentation and reflection between farmers, farmers' organisations, researchers and CTA personnel. In debates on ecosystem services, it has been argued that ecosystem services often tend to favour expert over local knowledge. Some of these scholars have called for notions and frameworks that better incorporate local knowledge, such as the notion of cultural ecosystem services and the framework of Nature Contributions to People (Díaz et al. 2018). In line with Escobar (2016) and Sousa Santos (2007), our analysis demonstrates that for the development of these alternatives to be possible, dominant knowledges and values that exclude or subordinate people need to be challenged. In the Zona da Mata, knowledges that advance mono-cropping, agro-toxins, commodity production and associated values of profit and competition, had to be challenged for knowledge around agroforestry, cooperative arrangements and local markets, and associated values of collaboration, respect for nature and reciprocity, to be created. Our analysis further illustrates that research collaborations that are sensitive and responsive to farmers and their experiences with nature can enable the creation of inclusive knowledge.

Finally, embodiment into care practices was enabled by a supportive institutional environment. In the Zona da Mata joint experiments and collective reflections informed efforts for institutional change. In the literature on ES, institutional change is fostered by measuring, mapping and valuing ecosystem practices and using the resulting information to inform policies. Critics have argued that such information poorly aligns with existing institutional arrangements, proposing that ES assessments better accommodate for local concerns and capacities (Kull et al. 2015, Primmer). Other scholars have argued that dependency on certain institutional arrangements such as commodity markets can be harmful, instead proposing to focus on creating practices that circumvent these institutions or institutions that are locally governed (Van den Berg 2018b, Pahnke 2015, Van der Ploeg 2008). The case of the Zona da Mata shows that these strategies can be fruitfully combined (see also Van den Berg et al. 2021). The agroecology movement supported the establishment of agroforestry practices that circumvent commodity markets and research arrangements that are more inclusive to farmers. It also advocated for policies that built on local capacities, such as the PAA which supports local markets. Our results further shows that affective alignments between farmers, farmer organisations, researchers and the CTA played a central role not only in ensuring that institutional efforts build on local wishes and capacities but also in maintaining agents motivated to carry on with their efforts.

6. Conclusion

In this article we have shown that affects play a decisive role in integrating biodiversity and food production. As such, it supports the work in geography advocating for 'land sharing' (Kremen and Merelender 2018) and territorial alternatives (Van den Berg et al. 2021, Escobar 2010, Porto-Gonçalves 2006) that argue that food production should be situated in places that also work for the benefit of nature, culture and the sovereignty of its inhabitants. We show that affects play different roles in the production of such places. First, it acts as a force of creation. Affects evoke bodily sensations and embodied experiences that draw people to trees, the soil, animals and fellow community members (see also Sherwood et al. 2017, Escobar 2016, Lorimer 2007). The case of the Zona da Mata shows that these sensations and experiences can turn into wishes to construct farming, community and market practices that integrate food production and biodiversity. Second, affects act as a force of contestation (Guattari and Rolnik 1999, Hayes-Conroy and Montoya 2017). Affects can be mobilised to encourage people to reflect upon, identify and challenge modernist practices that are exploitative or unsustainable, including those that rely on the use of agro-chemicals or are dependent on global markets. Finally, affects act as a force of resistance (Daskalaki 2017, de La Cadena 2015). They can be mobilised to draw people together into what Fernandes (2005) coined as "territorial movements" that translate local concerns into national policy demands. By fostering experimentation and discovery, affects were thus mobilised to build resistance alternatives that are more autonomous

from modern technologies and markets, and that foster different modes of existence (see also Van den Berg et al. 2021).

Via the notion of affects, some of the blind spots in socio-ecological and socio-technical systems approaches to transformation can be addressed. The notions of transition management and ecosystem services focus on practices and institutions for transformation, but pay less attention to the affects that encourage and enable people to mobilise and establish them. The notion of affect illustrates that to encourage people to engage in processes of transformation, these processes must align with their grievances, wishes and/or other bodily affects. The notion of affect also illustrate how bodily sensations enable the creation of sustainable practices by fostering caring relations with nature and create knowledge and institutional arrangements that are supportive of human and non-human others. Moreover, our analysis also underscores the importance of politicization as a key component of sustainability transformations (Rosset et al. 2019). We have seen this both in the importance of reflection and challenging, as in the way in which agroecology complemented coalition efforts with wider movement building. Our analysis thus supports scholars who argue that power should be at the heart of transition theory (or any other theory of transformation), as failure to do so may very well lead transition efforts to conform to rather than transform the dominant regime (Scoones et al. 2020, Feola et al. 2021). We add that power should not only be understood in terms of control over resources and knowledge but also as the power to affect and be affected.

Affect provides not only a lens but also a potential that can be deliberately built and drawn upon to realise transformation from the bottom-up. While our research was focused on the agroecology movement in Brazil, other social movements such as the international peasant movement of La Via Campesina, the Food Sovereignty Movement, the Environmental Justice Movement and movements of indigenous peoples have also been reported to use practices that employ affects to mobilise people on the ground, including e.g. the exchange of experiences, engagement in political reflections, or the development and/or advocacy of alternatives for policy and institutional change (Rosset et. al 2019, Val et al. 2019, Pelenc et. al 2019, Apostolopoulou and Cortes-Vazquez 2018, Temper et. al. 2018, Escobar 2016). However, care should be taken not to romanticise affects. Affects can equally well be manipulated and used to reproduce power inequalities that exploit, exclude or marginalise people and nature (e.g. Zembylas 2021). To avoid this from happening, the case of agroecology in Brazil points to the importance of gatherings that employ people's affects to reflect upon and challenge oppressive power relations situated in everyday life and to create knowledges, practices and institutions that are inclusive of human and non-human others. Only then, can a transformation be fostered that is sustainable and emancipatory.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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